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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,073	06/04/2001	Emir Gurur	8003-391	6810
21971	7590	05/18/2004	EXAMINER	
WILSON SONSINI GOODRICH & ROSATI			KACKAR, RAM N	
650 PAGE MILL ROAD			ART UNIT	
PALO ALTO, CA 943041050			PAPER NUMBER	

1763

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/874,073

Applicant(s)

GURER ET AL.

Examiner

Ram N Kackar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 45-47, 50, 51, 61-63, 65-67 and 70-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 45-47, 50, 51, 61-63, 65-67 and 70-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 45-47, 50, 61-63, 65-67 and 70-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al (US 6149727) in view of Chu et al (US 6120660) and further in view of Shusaku Yanagawa (JP 10321545) as evidenced by Williams et al (US 5647953).

Yoshioka et al disclose a process chamber comprising a media delivery member (Fig 1-9), a spin chuck (Fig 1-20) and a plurality of point contact support structures (Fig 2 and Fig 3-27) and vacuum ring (Fig 2-24).

Yoshioka et al do not disclose a coating layer of silicon oxide on the spin chuck.

Chu et al disclose a susceptor coated by a silicon-bearing compound (Col 6 lines 48- 60) like silicon dioxide (Col 12 claim 5). The thickness of the coating is disclosed to be 0.5- 2.0 micron (Col 7 lines 18-19). Chu et al also teach that a silicon-bearing compound for protective layer is especially useful when a silicon substrate is used (Col 6 line 67).

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to have a silicon based (silicon oxide) coating on the spin chuck including point contact structures to reduce micro-contamination, especially as silicon is generally the material of substrates for processing on the spin chuck and increase operating life of the chuck due to reduced abrasion.

Yoshioka et al and Chu et al do not disclose a skirt around the periphery of the wafer support surface.

Shusaku Yanagawa discloses a skirt for thermal shielding around the periphery of the wafer support surface (Fig 1-6 and abstract), which does not support the substrate and is of a size that the total is greater than the size of substrate.

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to have a skirt of thermal shield material so as to provide temperature uniformity on the substrate support surface.

Regarding claim 50, as the material of the coating is silicon oxide its hardness is generally less than the hardness of silicon. Moreover, as hardness of coating layer depends upon process conditions, it would be controllable within a range.

Regarding the citation of encapsulation of particulate matter, Williams et al disclose a method of coating interior surfaces of a chamber with dielectric layer of silicon dioxide after cleaning and disclose that this coating step traps particulates (Col 6 lines 5-10) and left over uncoated particles could contaminate substrates (Col 5 lines 23-28). This teaching clearly indicates that the surface property of this dielectric coated layer is such as to trap the contaminants and prevent their transfer to substrates.

3. Claims 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al (US 6149727) in view of Chu et al (US 6120660) and further in view of Shusaku Yanagawa (JP 10321545) as applied to claim 45 and further in view of Lu et al (US 5904778).

Yoshioka et al do not disclose the thickness of the silicon-bearing layer.

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Lu et al disclose a protective layer of silicon carbide less than 100 micron (Col 6 lines 21-22) enough for protection. Too thick coatings could have a problem of peeling off.

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to make sure the thickness of the protective coating is enough for protection as too thick layers may not be stable.

***Response to Amendment***

Applicant's arguments filed 3/25/2004 have been fully considered.

Applicant's argument regarding Chen is now moot in view of new grounds of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571 272 1439. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK

  
GREGORY MILLS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700